

09/408,323

(FILE 'HOME' ENTERED AT 07:11:50 ON 28 DEC 2000)

L1 FILE 'CAPLUS' ENTERED AT 07:12:05 ON 28 DEC 2000
1 S 1999:565970/AN

L2 FILE 'REGISTRY' ENTERED AT 07:14:40 ON 28 DEC 2000
1 S 1071-83-6 — *glyphosate*

L3 FILE 'CAPLUS' ENTERED AT 07:15:25 ON 28 DEC 2000
271 S L2/PREP
L4 562005 S OXIDATION
L5 61 S L3 AND L4
L6 781986 S CARBON OR CHARCOAL
L7 21 S L5 AND L6

L7 ANSWER 1 OF 21 CAPLUS COPYRIGHT 2000 ACS

ACCESSION NUMBER: 1999:635504 CAPLUS

DOCUMENT NUMBER: 131:259171

TITLE: Method for manufacture of N-phosphonomethylglycine from N-phosphonomethyliminodiacetic acid using catalytic **carbon**

INVENTOR(S): Hayden, Richard A.; Matviya, Thomas M.

PATENT ASSIGNEE(S): Calgon Carbon Corporation, USA

SOURCE: U.S., 5 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5962729	A	19991005	US 1998-78775	19980514
WO 9958537	A1	19991118	WO 1999-US9799	19990505

W: CN, DK, HU, JP, KR

RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

PRIORITY APPLN. INFO.: US 1998-78775 19980514

AB An improved process is provided for manuf. of N-phosphonomethylglycine from N-phosphonomethyliminodiacetic acid in the presence of a mol.-oxygen contg. gas using a catalytically active carbonaceous char capable of rapidly decomp. H₂O₂ in an aq. soln.

REFERENCE COUNT: 3

REFERENCE(S): (1) Franz; US 3950402 1976 CAPLUS
(2) Hershman; US 3969398 1976 CAPLUS
(3) Matviya; US 5356849 1994 CAPLUS

L7 ANSWER 2 OF 21 CAPLUS COPYRIGHT 2000 ACS

ACCESSION NUMBER: 1999:565987 CAPLUS

DOCUMENT NUMBER: 131:186947

TITLE: Process and apparatus for preparation of phosphorus oxyacids such as phosphoric acid or phosphonic acid from elemental phosphorus by catalytic **oxidation**

INVENTOR(S): Heise, Jerald I.; Sall, Erik D.; McGrath, Martin P.

PATENT ASSIGNEE(S): Monsanto Company, USA

SOURCE: PCT Int. Appl., 178 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9943612	A1	19990902	WO 1999-US3602	19990219

W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ,

TM

RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

AU 9929718 A1 19990915 AU 1999-29718 19990219
 EP 1058672 A1 20001213 EP 1999-910967 19990219

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI

PRIORITY APPLN. INFO.: US 1998-76089 19980226
 US 1998-99043 19980903
 US 1999-250254 19990216
 WO 1999-US3602 19990219

AB An oxyacid of phosphorus is prepd. by oxidizing elemental phosphorus, esp. tetraphosphorus, by catalytic reaction with water in a catalytic slurry reactor or fixed-bed reactor at <200.degree.C and <20 atm producing a lower phosphorus **oxidn.** product at a rate of 0.01 kg/m3-h. Sonic energy or microwaves may be introduced into the reaction zone during reaction. The use of a noble metal catalyst, e.g., Pd or Pd black, under moderate agitation and low severity conditions provides high selectivity in prepn. of P(III) oxyacids. Other platinum group metals, and oxides, salts, phosphides and coordination compds. of platinum group metals, Group IB metals and Group VIII metals, may be used as catalysts. App. and process schemes are described for the prepn. of phosphoric acid and phosphonic acid.

REFERENCE COUNT: 1
 REFERENCE(S): (1) Wietzel, G; US 1916594 A 1933

L7 ANSWER 3 OF 21 CAPLUS COPYRIGHT 2000 ACS
 ACCESSION NUMBER: 1999:565970 CAPLUS
 DOCUMENT NUMBER: 131:186545
 TITLE: Deeply reduced catalyst and its use for catalyzing liquid phase **oxidation** reactions
 INVENTOR(S): Ebner, Jerry R.; Leiber, Mark A.; Wan, Kam-To; Woods, Anthony; Rogers, Peter E.
 PATENT ASSIGNEE(S): Monsanto Company, USA
 SOURCE: PCT Int. Appl., 149 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

*applicant's
PCT*

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9943430	A1	19990902	WO 1999-US3402	19990217
W:	AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ,			
TM				
RW:	GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
AU 9927707	A1	19990915	AU 1999-27707	19990217

EP 1060017 A1 20001220 EP 1999-908217 19990217
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO
 PRIORITY APPLN. INFO.: US 1998-75988 19980225
 US 1999-248655 19990211
 WO 1999-US3402 19990217

AB This invention relates to an improved catalyst, comprising a **carbon** support having a noble metal at its surface, for use in catalyzing liq. phase **oxidn.** reactions, esp. in an acidic oxidative environment and in the presence of solvents, reactants, intermediates, or products which solubilize noble metals; a process for the prepn. of the improved catalyst; a liq. phase **oxidn.** process using such a catalyst wherein the catalyst exhibits improved resistance to noble metal leaching, particularly in acidic oxidative environments and in the presence of solvents, reactants, intermediates, or products which solubilize noble metals; and a liq. phase **oxidn.** process in which N-(phosphonomethyl)iminodiacetic acid (i.e. , "PMIDA") or a salt thereof is oxidized to form N-(phosphonomethyl)glycine (i.e. , "glyphosate") or a salt thereof using such a catalyst wherein the **oxidn.** of the formaldehyde and formic acid byproducts into **carbon** dioxide and water is increased.

REFERENCE COUNT: 6
 REFERENCE(S): (1) Bayer Ag; EP 0595124 A 1994 CAPLUS
 (2) Engelhard Min & Chem; GB 1601715 A 1981 CAPLUS
 (3) Franz, J; US 3950402 A 1976 CAPLUS
 (4) Imre, P; US 4415479 A 1983 CAPLUS
 (5) Monsanto Co; EP 0162035 A 1985 CAPLUS
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 4 OF 21 CAPLUS COPYRIGHT 2000 ACS
 ACCESSION NUMBER: 1999:537974 CAPLUS
 DOCUMENT NUMBER: 131:159143
 TITLE: Method for manufacture of N-phosphonomethylglycine from N-phosphonomethyliminodiacetic acid using low temperature catalytic **carbon**
 INVENTOR(S): Farmer, Richard W.; Vaughn, Robert H.
 PATENT ASSIGNEE(S): Calgon Carbon Corporation, USA
 SOURCE: U.S., 5 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5942643	A	19990824	US 1998-78748	19980514

AB The process comprises contacting an aq. soln. of N-phosphonomethyliminodiacetic acid with a gas contg. mol. oxygen at a temp. sufficiently elevated to initiate and sustain reaction in the presence of a catalyst, the improvement therein comprising using a low temp. catalytically active carbonaceous char produced by the steps of (a) combining a nitrogen-contg. material with a **carbon**-contg. material to produce a mixt., (b) carbonizing the mixt. at an elevated

temp. <600.degree., (c) oxidizing the carbonized mixt. during or after the carbonization at <600.degree., and (d) increasing the temp. of the carbonized and oxidized mixt. to >600.degree. to provide a low temp. catalytically active carbonaceous char. The use of a carbonaceous char is capable of rapidly decomp. H₂O₂ in an aq. soln.

REFERENCE COUNT: 6
 REFERENCE(S): (1) Anon; DE 19500121 1995 CAPLUS
 (2) Chou; US 4624937 1986 CAPLUS
 (3) Franz; US 4147719 1979 CAPLUS
 (4) Hershman; US 3969398 1976 CAPLUS
 (5) Hershman; US 4579689 1986 CAPLUS
 ALL CITATIONS AVAILABLE IN THE RE FORMAT.

L7 ANSWER 5 OF 21 CAPLUS COPYRIGHT 2000 ACS
 ACCESSION NUMBER: 1999:529154 CAPLUS
 DOCUMENT NUMBER: 131:144714
 TITLE: Process for preparation of glyphosate by oxidizing N-substituted glyphosates
 INVENTOR(S): Morgenstern, David A.; Fobian, Yvette M.
 PATENT ASSIGNEE(S): Monsanto Company, USA
 SOURCE: PCT Int. Appl., 55 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9941260	A1	19990819	WO 1998-US2883	19980212
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9861663	A1	19990830	AU 1998-61663	19980212
AU 719152	B2	20000504		
US 6005140	A	19991221	US 1998-23404	19980212
ZA 9801219	A	19981124	ZA 1998-1219	19980213
NO 9902246	A	19991011	NO 1999-2246	19990507
BR 9806202	A	20000215	BR 1998-6202	19990507
PRIORITY APPLN. INFO.:			US 1998-22967	19980212
			WO 1998-US2883	19980212
OTHER SOURCE(S): CASREACT 131:144714; MARPAT 131:144714				
AB This invention is directed to process for prepn. of R ₃ OC(O)CH ₂ NHCH ₂ P(O)(OR ₄)(OR ₅) (R ₃ , R ₄ , R ₅ = independently H, substituted or unsubstituted hydrocarbyl, or an agronomically acceptable cation).				
The process comprises contacting a soln. with a noble metal catalyst and introducing oxygen into the soln. The soln. contains an N-substituted glyphosate R ₃ OC(O)CH ₂ N(CH ₂ R ₁ R ₂)CH ₂ P(O)(OR ₄)(OR ₅) (R ₁ , R ₂ = independently H,				

halo, -PO₃H₂, -SO₃H₂, -NO₂, (un)substituted hydrocarbyl other than -CO₂H).

This invention also relates to an **oxidn.** catalyst comprising a noble metal having a hydrophobic electroactive mol. species adsorbed thereon. Thus, reaction of sarcosine with phosphorus acid in HCl followed by treatment with formalin gave 70.5% N-methylglyphosate. Platinum catalyzed oxidative dealkylation of N-methylglyphosate in water in the presence of oxygen gave 85.4% glyphosate.

REFERENCE COUNT: 7

REFERENCE(S): (1) Ebner; US 5627125 A 1997 CAPLUS
(2) Fields; US 4810426 A 1989 CAPLUS
(3) Franz; US 3954848 A 1976 CAPLUS
(4) Franz; US 4147719 A 1979 CAPLUS
(5) Hodgkinson; US 5500485 A 1996 CAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 6 OF 21 CAPLUS COPYRIGHT 2000 ACS

ACCESSION NUMBER: 1999:160326 CAPLUS

DOCUMENT NUMBER: 130:313453

TITLE: Effect of the Nature of **Carbon** Catalysts on Glyphosate Synthesis

AUTHOR(S): Pinel, Catherine; Landrison, Emmanuel; Lini, Hedi; Gallezot, Pierre

CORPORATE SOURCE: Institut de Recherches sur la Catalyse, CNRS, Villeurbanne, 69626, Fr.

SOURCE: J. Catal. (1999), 182(2), 515-519

CODEN: JCTLA5; ISSN: 0021-9517

PUBLISHER: Academic Press

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Aq. solns. of PMIDA (N-phosphonomethyliminodiacetic acid) were oxidized using air to obtain glyphosate (N-(phosphonomethyl)glycine), an active herbicide. The oxidative decarboxylation reaction was catalyzed selectively by activated **carbon** obtained from different precursors and modified by specific thermal treatments. The catalytic activity was highly dependent upon the functional groups present on the **carbon** surface. Nitrogen-contg. functional groups greatly enhanced the **oxidn.** rate; these groups were either issued from the **carbon** precursors or introduced by thermal treatment under NH₃. The highest rate of PMIDA **oxidn.** was obtained using non-activated **carbon** treated with NH₃ at 900.degree.. The activity was also enhanced by thermal treatments at 900.degree. under N₂ which eliminated the acidic sites from the **carbon** surface, and possibly created active basic sites. (c) 1999 Academic Press.

REFERENCE COUNT: 19

REFERENCE(S): (12) Riley, D; Inorg Chem 1991, V30, P4191 CAPLUS
(13) Riley, D; J Am Chem Soc 1991, V113, P3371 CAPLUS
(14) Riley, D; J Am Chem Soc 1992, V114, P1881 CAPLUS
(17) Vidic, R; Carbon 1997, V35, P1349 CAPLUS
(18) Voll, M; Carbon 1971, V9, P481 CAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 7 OF 21 CAPLUS COPYRIGHT 2000 ACS

ACCESSION NUMBER: 1997:533215 CAPLUS

DOCUMENT NUMBER: 127:220947

TITLE: Chemoenzymic synthesis of N-(phosphonomethyl)glycine

AUTHOR(S): Gavagan, John E.; Fager, Susan K.; Seip, John E.;
Clark, Dawn S.; Payne, Mark S.; Anton, David L.;
DiCosimo, Robert

CORPORATE SOURCE: Cent. Res. Dev. Dep., Experimental Station, E. I. du
Pont de Nemours and Co., Wilmington, DE, 19880-0328,
USA

SOURCE: J. Org. Chem. (1997), 62(16), 5419-5427
CODEN: JOCEAH; ISSN: 0022-3263

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 127:220947

AB Permeabilized, metabolically-inactive transformants of the methylotrophic
yeasts *Hansenula polymorpha* and *Pichia pastoris* which contain significant
quantities of the enzymes spinach glycolate oxidase [(S)-2-hydroxyacid
oxidase, EC 1.1.3.15], *Saccharomyces cerevisiae* catalase T (EC 1.11.1.6),
and endogenous catalase have been used as catalysts for the **oxidn**
. of glycolic acid by oxygen to produce glyoxylic acid in aq. mixts.
contg. (aminomethyl)phosphonic acid. After sepn. and recovery of the
microbial catalyst from the **oxidn**. product mixt. for reuse, the
resulting soln. of glyoxylic acid and (aminomethyl)phosphonic acid was
subsequently hydrogenated with a palladium/**carbon** catalyst to
produce N-(phosphonomethyl)glycine (glyphosate), a broad-spectrum,
postemergent herbicide. Complete conversion of (aminomethyl)phosphonic
acid in the hydrogenation allowed the use of a simple acid pptn. for
isolation of the N-(phosphonomethyl)glycine from the hydrogenation
product
mixt. in high purity and yield.

L7 ANSWER 8 OF 21 CAPLUS COPYRIGHT 2000 ACS

ACCESSION NUMBER: 1997:61359 CAPLUS

DOCUMENT NUMBER: 126:75068

TITLE: Facile synthesis of phosphonomethylglycine from
oxidn. of phosphonomethyliminodiacetic acid

INVENTOR(S): Cullen, Barry A.; Parker, Brian A.

PATENT ASSIGNEE(S): Hampshire Chemical Corporation, USA

SOURCE: PCT Int. Appl., 22 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9638455	A1	19961205	WO 1996-US5281	19960417
W:	AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI			
RW:	KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML			
AU 9655510	A1	19961218	AU 1996-55510	19960417
AU 698565	B2	19981105		
CN 1191539	A	19980826	CN 1996-195765	19960417
ZA 9603362	A	19961108	ZA 1996-3362	19960426
PRIORITY APPLN. INFO.:			US 1995-453003	19950530

at the Board

WO 1996-US5281 19960417

AB A process for the prepn. of phosphonomethylglycine (PMG) in nearly quant. yields which comprises the **oxidn.** of phosphonomethyliminodiacetic acid (PMIDA) with the more chem. active **H2O2** in combination with activated C to give PMG in very high yield. The amt. of oxidant allowed to react with PMIDA is a function of the concn. of O in the gaseous reaction products, and is controlled by monitoring that concn.

In another embodiment, the oxidizing agent is an O-contg. gas. In either case, the concn. of O in the gaseous reaction product was monitored to det. the end point of the reaction.

L7 ANSWER 9 OF 21 CAPLUS COPYRIGHT 2000 ACS

ACCESSION NUMBER: 1996:646509 CAPLUS

DOCUMENT NUMBER: 125:276186

TITLE: Process for producing N-phosphonomethylglycine by treating N-phosphonomethyliminodiacetic acid (PMIDA) with hydrogen peroxide over activated **carbon**

INVENTOR(S): Nakano, Kunio; Hirayama, Yukio; Sayama, Shuzi; Ohashi,

Naohiko

PATENT ASSIGNEE(S): Sankyo Co., Ltd., Japan

SOURCE: PCT Int. Appl., 27 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9627602	A1	19960912	WO 1996-JP550	19960307
W: AU, CA, CN, CZ, HU, KR, MX, NO, NZ, RU, US				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT,				
JP 08301887	A2	19961119	JP 1996-45844	19960304
AU 9648893	A1	19960923	AU 1996-48893	19960307
CN 1183100	A	19980527	CN 1996-193655	19960307
US 5948938	A	19990907	US 1997-944029	19970829
PRIORITY APPLN. INFO.:			JP 1995-46005	19950307
			WO 1996-JP550	19960307

AB A process for producing the title compd. (I) in H2O safely and efficiently is claimed. I is an useful material for prodn. of N-phosphonomethylglycine salt as a herbicide. Thus, PMIDA was oxidized by H2O2 over activated **carbon** (NORIT SX-ULTRA) in H2O to give 83.7% I.

L7 ANSWER 10 OF 21 CAPLUS COPYRIGHT 2000 ACS

ACCESSION NUMBER: 1996:504135 CAPLUS

DOCUMENT NUMBER: 125:143008

TITLE: Preparation of herbicidal N-phosphonomethylglycine

INVENTOR(S): Riebel, Hans-Jochem

PATENT ASSIGNEE(S): Bayer A.-G., Germany

SOURCE: Ger. Offen., 3 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19500121	A1	19960711	DE 1995-19500121	19950104
WO 9620944	A1	19960711	WO 1995-EP5095	19951222
W: AU, BB, BG, BR, BY, CA, CN, CZ, FI, HU, JP, KR, KZ, LK, MX, NO, NZ, PL, RO, RU, SK, UA, US				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9643471	A1	19960724	AU 1996-43471	19951222
PRIORITY APPLN. INFO.:			DE 1995-19500121	19950104
			WO 1995-EP5095	19951222

OTHER SOURCE(S): CASREACT 125:143008

AB The herbicide (HO)2P(O)CH2NHCH2CO2H was prepd. in good yield (e.g. 81%) and in high purity from (HO)2P(O)CH2N(CH2CO2H)2 and oxygen in the presence of active **carbon** and a basic auxiliary in water at 0-150.degree.. Esp. suitable are guanidine carbonate as basic auxiliary and pure, not esp. activated 'p.A.'-active **carbon** as catalyst.

L7 ANSWER 11 OF 21 CAPLUS COPYRIGHT 2000 ACS

ACCESSION NUMBER: 1992:106734 CAPLUS

DOCUMENT NUMBER: 116:106734

TITLE: Electron transfer agents in metal-catalyzed dioxygen **oxidations**: effective catalysts for the interception and **oxidation** of **carbon** radicals

AUTHOR(S): Riley, Dennis P.; Fields, Donald L.

CORPORATE SOURCE: Monsanto Co., St. Louis, MO, 63167, USA

SOURCE: J. Am. Chem. Soc. (1992), 114(5), 1881-2

CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Homogeneous solns. of vanadium(IV,V) salt's are very active catalysts for the mol. oxygen driven **oxidn.** of H2O3PCH2N(CH2CO2H)2 (I).

Vanadium catalysts are much less selective than cobalt catalysts in formation of the desired product H2O3PCH2NHCH2CO2H (II), generating instead the tertiary amine H2O3PCH2NMeCH2CO2H (III) in high yield. The presence of an electron-transfer agent such as methylviologen, a dicationic bisquaternary amine, or a sulfonated anthraquinone in catalytic amts. influences dramatically the yield of products; e.g., the selectivity

for **oxidn.** of carried out to 100% conversion at the natural pH (.apprx.1) in water at 75.degree. under a dynamic O2 pressure of 200 psig is 50% to II and is 40% to the methylated product III when [I]i = 0.10 M and [VOSO4]=0.005 M. When an amt. of methylviologen equal to the [VOSO4] was added to an identical reaction, the yield of III dropped to less than 1% and the selectivity to II was increased to .apprx.92% with no effect

on

the rate. Kinetic and mechanistic studies of the vanadium-catalyzed **oxidn.** indicate that an N-methylene radical species is a key intermediate leading to the products II or III. The role of the electron

transfer agent is to intercept this radical intermediate and oxidize it to an iminium cation which hydrolyzes to formaldehyde and II.

L7 ANSWER 12 OF 21 CAPLUS COPYRIGHT 2000 ACS

ACCESSION NUMBER: 1991:632353 CAPLUS

DOCUMENT NUMBER: 115:232353

TITLE: Vanadium(IV,V) salts as homogeneous catalysts for the oxygen **oxidation** of N-(phosphonomethyl)iminodiacetic acid to N-(phosphonomethyl)glycine

AUTHOR(S): Riley, Dennis P.; Fields, Donald L.; Rivers, Willie

CORPORATE SOURCE: Monsanto Co., St. Louis, MO, 63167, USA

SOURCE: Inorg. Chem. (1991), 30(22), 4191-7

CODEN: INOCAJ; ISSN: 0020-1669

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Several metal ions are capable of catalyzing the mol. oxygen **oxidn** of N-(phosphonomethyl)iminodiacetic acid (PMIDA) to N-(phosphonomethyl)glycine (PMG), the active agent in the herbicide Roundup.

Of these metal ions, vanadium, manganese, and cobalt salts were the most active, with the relative order of activity under a given set of conditions being V > Mn > Co. The vanadium-catalyzed PMIDA **oxidns** proceed at much faster rates and under milder conditions than with the other metals, but the chem. suffers from lower selectivities. Kinetic and

mechanistic studies reveal that the reactions are first-order in the [PMIDA], [V]tot, and [H+]. In addn., the rate exhibits O2 satn. kinetics,

while increasing O2 pressure increases the selectivity to PMG. From spectrophotometric, deuterium isotope, and other mechanistic studies, key mechanistic features were elucidated: (1) An OVIV(PMIDA-H) complex is first oxidized to V(V). (2) V(V) **oxidn**. of a carboxyl moiety yields an intermediate **carbon**-centered N-methylenePMG radical. (3) The trapping of this radical with O2 results in the formation of N-formylPMG, which hydrolyzes to PMG. (4) H atom abstraction by the N-methylenePMG radical leads to the undesired byproduct N-methylPMG.

L7 ANSWER 13 OF 21 CAPLUS COPYRIGHT 2000 ACS

ACCESSION NUMBER: 1991:207718 CAPLUS

DOCUMENT NUMBER: 114:207718

TITLE: ~~Homogeneous catalysts~~ for selective molecular oxygen driven oxidative decarboxylations

AUTHOR(S): Riley, Dennis P.; Fields, Donald L.; Rivers, Willie

CORPORATE SOURCE: Monsanto Co., St. Louis, MO, 63167, USA

SOURCE: J. Am. Chem. Soc. (1991), 113(9), 3371-8

CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Cobalt(II) catalyzes the mol. oxygen-driven **oxidn**. of H2O3PCH2N(CH2CO2H)2 (I) to H2O3PCH2NHCH2CO2H (II) in aq. soln. This homogeneous catalytic conversion is novel and represents, in effect, an oxidative dealkylation of 1 carboxymethyl moiety yielding the N-substituted glycine. The reaction is selective to II when carried out at the natural pH of the free acid substrate (.apprx.1-2) and when carried

out at substrate loadings less than 5% by wt. In addn., the catalytic system is selective for I; i.e., other closely related ligands show no reactivity; e.g., NTA, EDTA, etc. The results of kinetic and mechanistic studies on dil. systems are presented and discussed with special emphasis on how an understanding of the mechanism can make it possible to generate a catalyst system that gives high yields even with high substrate loadings. The reactions are 1st-order in substrate and [Co]. The oxygen pressure dependence exhibits satn. kinetics, while the selectivity increases as oxygen pressure increases. The rate is also inversely proportional to [H⁺]. The high selectivity of the **oxidn.** and the unique selectivity of the cobalt catalytic system for the substrate I are discussed in terms of the magnitude of the metal ligand binding const. at the low pH of the reaction.

L7 ANSWER 14 OF 21 CAPLUS COPYRIGHT 2000 ACS
 ACCESSION NUMBER: 1987:19046 CAPLUS
 DOCUMENT NUMBER: 106:19046
 TITLE: N-(Phosphonomethyl)glycine
 INVENTOR(S): Fava, Ugolo
 PATENT ASSIGNEE(S): Finchimica S.p.A., Italy
 SOURCE: Braz. Pedido PI, 27 pp.
 CODEN: BPXXDX
 DOCUMENT TYPE: Patent
 LANGUAGE: Portuguese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
BR 8406213	A	19860701	BR 1984-6213	19841205

AB The title amino acid was prepd. in 3 steps. The reaction of NH₃ with ClCH₂CO₂H gave HN(CH₂CO₂H)₂ which underwent a Mannich reaction with HCHO and H₃PO₃ to give (HO)2P(O)CH₂N(CH₂CO₂H)₂ (I). **Oxidn.** of I over C or Pd gave (HO)2P(O)CH₂NHCH₂CO₂H.

L7 ANSWER 15 OF 21 CAPLUS COPYRIGHT 2000 ACS
 ACCESSION NUMBER: 1986:497686 CAPLUS
 DOCUMENT NUMBER: 105:97686
 TITLE: **Oxidation** with encapsulated cocatalyst
 INVENTOR(S): Felthouse, Timothy R.
 PATENT ASSIGNEE(S): Monsanto Co., USA
 SOURCE: U.S., 9 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4582650	A	19860415	US 1985-700170	19850211

AB HCHO, a reactive byproduct in the oxidative cleavage of (HO)2P(O)CH₂N(CH₂CO₂H)₂ (I) to (HO)2P(O)CH₂NHCH₂CO₂H (II) using an activated **carbon** catalyst, is further oxidized to CO₂ and H₂O in the presence of a modified zeolite co-catalyst contg. an encapsulated noble metal at 75-150.degree. and 100-750 kPa. Thus, 4 g I, 1 g Norit A

activated **carbon**, and 0.15 g Pt encapsulated mordenite with pore openings < 8 .ANG., were treated with O at 95.degree. and atm. pressure to give 95% II. The prepn. and modification of the catalysts are also described.

L7 ANSWER 16 OF 21 CAPLUS COPYRIGHT 2000 ACS

ACCESSION NUMBER: 1986:209151 CAPLUS

DOCUMENT NUMBER: 104:209151

TITLE: **Oxidation** catalyst

INVENTOR(S): Chou, Shine King

PATENT ASSIGNEE(S): Monsanto Co. , USA

SOURCE: Eur. Pat. Appl., 20 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 162035	A2	19851121	EP 1985-870066	19850510
EP 162035	A3	19870415		
EP 162035	B1	19891220		
R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
US 4624937	A	19861125	US 1985-705391	19850228
ES 542920	A1	19870216	ES 1985-542920	19850508
AU 8542212	A1	19851114	AU 1985-42212	19850509
AU 569794	B2	19880218		
JP 60246328	A2	19851206	JP 1985-98880	19850509
JP 03046446	B4	19910716		
BR 8502200	A	19860114	BR 1985-2200	19850509
ZA 8503525	A	19860625	ZA 1985-3525	19850509
CA 1244398	A1	19881108	CA 1985-481143	19850509
HU 39627	A2	19861029	HU 1985-1779	19850510
HU 205028	B	19920330		
IL 75161	A1	19881031	IL 1985-75161	19850510
AT 48766	E	19900115	AT 1985-870066	19850510
US 4696772	A	19870929	US 1986-851764	19860414
PRIORITY APPLN. INFO.:			US 1984-608831	19840510
			US 1985-705391	19850228
			EP 1985-870066	19850510

AB The removal of surface oxides from activated **carbon** catalysts increases the activity of the catalyst in the selective prodn. of secondary amines and primary amines from tertiary amines or secondary amines. Thus, 12 g activated **carbon** (Calgon C) was added to 100 mL 18.1% HNO₃, heated 6 h at 85.degree.-100.degree., cooled, freed of liq., dried at 85.degree., heated 1 h .apprx.930.degree. in N, cooled in N, and used (1.2 g) at 85.degree. (50-55 psig O) for the **oxidn.** of 7.3 g (HO₂CCH₂)₂NCH₂P(O)(OH)₂ in 92 mL water to prep. N-(phosphonomethyl)glycine. The reaction required 20 min, vs. 40 min with untreated Calgon C.

L7 ANSWER 17 OF 21 CAPLUS COPYRIGHT 2000 ACS

ACCESSION NUMBER: 1985:132268 CAPLUS

DOCUMENT NUMBER: 102:132268

TITLE: N-Phosphonomethylglycine acid
 INVENTOR(S): Bakel, Izhak
 PATENT ASSIGNEE(S): Geshuri Laboratories Ltd., Israel
 SOURCE: Eur. Pat. Appl., 20 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 125363	A1	19841121	EP 1983-304517	19830804
R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
IL 68716	A1	19870331	IL 1983-68716	19830517
DK 8402251	A	19841118	DK 1984-2251	19840507
FI 8401813	A	19841118	FI 1984-1813	19840507
AU 8427818	A1	19841122	AU 1984-27818	19840509
AU 559641	B2	19870319		
ZA 8403503	A	19850227	ZA 1984-3503	19840509
NO 8401910	A	19841119	NO 1984-1910	19840511
US 4507250	A	19850326	US 1984-609213	19840511
HU 34758	O	19850429	HU 1984-1849	19840511
CS 244136	B2	19860717	CS 1984-3509	19840511
ES 532472	A1	19851001	ES 1984-532472	19840512
JP 59219298	A2	19841210	JP 1984-100363	19840517
BR 8402458	A	19850402	BR 1984-2458	19840517
PRIORITY APPLN. INFO.:			IL 1983-68716	19830517
			US 1983-521072	19830808

AB (HO₂CCH₂)₂NCH₂P(O)(OH)₂.cntdot.[RR1NC(:NH)NR₂R₃]_n [n = 1, 2; R-R₃ = H, NH₂, C(:NH)NH₂, aryl, cycloalkyl, alkyl, alkenyl, alkylaryl; at least one of R-R₃ is H] was oxidized, and the resulting iminourea salt was treated with an acid stronger than N-phosphonomethylglycine acid (I) to give I and

the iminourea salt of the stronger acid. Thus, (HO₂CCH₂)₂NCH₂P(O)(OH)₂, guanidine carbonate, and catalyst Norit A in H₂O were heated at 100-105.degree. for 5 h under O₂, and the reaction mixt. acidified with HCl to give a 91% yield of I.

L7 ANSWER 18 OF 21 CAPLUS COPYRIGHT 2000 ACS
 ACCESSION NUMBER: 1981:66078 CAPLUS
 DOCUMENT NUMBER: 94:66078
 TITLE: N-Phosphonomethylglycine
 INVENTOR(S): Gaal, Antal; Farkas, Jozsef; Horvath, Sandor; Balint, Sandor; Kolonics, Zoltan; Soltesz, Laszlo; Lorincz, Lajos; Hajdu, Peter; Botar, Laszlo; et al.
 PATENT ASSIGNEE(S): Nitrokemia Ipartelepek, Hung.
 SOURCE: Ger. Offen., 15 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3017518	A1	19801113	DE 1980-3017518	19800507

DE 3017518	C2	19830414		
HU 27428	O	19831028	HU 1979-MA3146	19790511
HU 184168	B	19840730		
CH 642379	A	19840413	CH 1980-3047	19800421
ZA 8002457	A	19810429	ZA 1980-2457	19800423
ZA 8002456	A	19810429	ZA 1980-2456	19800423
IL 59903	A1	19830930	IL 1980-59903	19800423
FI 8001363	A	19801112	FI 1980-1363	19800428
FI 68242	B	19850430		
FI 68242	C	19850812		
SE 8003396	A	19801112	SE 1980-3396	19800506
SE 447901	B	19861222		
SE 447901	C	19870402		
IN 151845	A	19830813	IN 1980-CA525	19800506
SU 927121	A3	19820507	SU 1980-2917349	19800507
CS 221969	P	19830429	CS 1980-3211	19800507
ES 491296	A1	19810401	ES 1980-491296	19800508
DD 150614	C	19810909	DD 1980-220946	19800508
PL 122706	B1	19820831	PL 1980-224125	19800508
BE 883222	A1	19800901	BE 1980-200555	19800509
DK 8002040	A	19801112	DK 1980-2040	19800509
DK 147144	B	19840424		
DK 147144	C	19841008		
NO 8001381	A	19801112	NO 1980-1381	19800509
NO 152416	B	19850617		
NO 152416	C	19850925		
NL 8002674	A	19801113	NL 1980-2674	19800509
AU 8058285	A1	19801113	AU 1980-58285	19800509
AU 542716	B2	19850307		
FR 2456115	A1	19801205	FR 1980-10482	19800509
FR 2456115	B1	19850705		
BR 8002886	A	19801223	BR 1980-2886	19800509
JP 56018994	A2	19810223	JP 1980-61642	19800509
JP 02005759	B4	19900205		
CA 1155138	A1	19831011	CA 1980-351661	19800509
AT 8002472	A	19851115	AT 1980-2472	19800509
AT 380687	B	19860625		
EP 19445	A2	19801126	EP 1980-301549	19800512
EP 19445	A3	19810603		
EP 19445	B1	19830518		
EP 19445	B2	19881005		
R: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE				
GB 2049697	A	19801231	GB 1980-15644	19800512
GB 2049697	B2	19830928		
AT 3428	E	19830615	AT 1980-301549	19800512
PRIORITY APPLN. INFO.:			HU 1979-MA3146	19790511
			HU 1979-MA2251	19790511
			EP 1980-301549	19800512

AB The title compd. (I) was prepd. by the oxidn. of
N-(phosphonomethyl)iminodiacetic acid (II) by O or an O-contg. gas in the
presence of a catalyst. Thus, an aq. soln. of II was oxidized under 6
atm
pressure at 100.degree. in the presence of Norit A catalysts to give 100%
I.

DOCUMENT NUMBER: 91:57528
 TITLE: N-Phosphonomethylglycine salts
 INVENTOR(S): Franz, John E.
 PATENT ASSIGNEE(S): Monsanto Co., USA
 SOURCE: U.S., 6 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4147719	A	19790403	US 1978-926681	19780721
NL 7713959	A	19780622	NL 1977-13959	19771216
ES 465139	A1	19781001	ES 1977-465139	19771216
BE 861996	A1	19780619	BE 1977-183571	19771219
SE 7714408	A	19780621	SE 1977-14408	19771219
SE 436282	B	19841126		
SE 436282	C	19850307		
FI 7703835	A	19780621	FI 1977-3835	19771219
FI 64804	B	19830930		
FI 64804	C	19840110		
DK 7705659	A	19780621	DK 1977-5659	19771219
DK 146656	B	19831128		
DK 146656	C	19840507		
NO 7704358	A	19780621	NO 1977-4358	19771219
JP 53077018	A2	19780708	JP 1977-153510	19771219
JP 57029038	B4	19820619		
FR 2374328	A1	19780713	FR 1977-38249	19771219
FR 2374328	B1	19830107		
BR 7708434	A	19780808	BR 1977-8434	19771219
ZA 7707533	A	19781025	ZA 1977-7533	19771219
DD 133952	C	19790131	DD 1977-202762	19771219
AU 7731725	A1	19790628	AU 1977-31725	19771219
AU 515070	B2	19810312		
SU 692563	D	19791015	SU 1977-2556399	19771219
CS 194697	P	19791231	CS 1977-8482	19771219
HU 175020	P	19800428	HU 1977-MO997	19771219
GB 1575769	A	19800924	GB 1977-52699	19771219
CA 1090819	A1	19801202	CA 1977-293402	19771219
IL 53634	A1	19810331	IL 1977-53634	19771219
AT 7709068	A	19810415	AT 1977-9068	19771219
AT 364853	B	19811125		
PL 124260	B1	19830131	PL 1977-203139	19771219
CH 634580	A	19830215	CH 1977-15569	19771219
			US 1976-753232	19761220

PRIORITY APPLN. INFO.:

AB (HO)2P(O)CH2-Gly-OH mono or di salts with alkali metals, alk. earth metals, NH4+, or org. ammonium cations were prepd. by oxidizing an aq. soln. of the corresponding mono or di salt of N-phosphonomethyliminodiacetic acid (I) by an O-contg. gas at superatm. pressure (1.5 - 5 kg/cm3) over Pt/C. **Oxidn.** temps. >75.degree. are preferred, and temps. of .apprx.90 - 150.degree. are most preferred. The disadvantage of low aq. soly. of I and the presence of CH2O as coproduct can be minimized or eliminated by the **oxidn.** of salts of I over Pt/C.

L7 ANSWER 20 OF 21 CAPLUS COPYRIGHT 2000 ACS
 ACCESSION NUMBER: 1976:60000 CAPLUS
 DOCUMENT NUMBER: 84:60000
 TITLE: N-Phosphonomethylglycine
 INVENTOR(S): Hershman, Arnold
 PATENT ASSIGNEE(S): Monsanto Co., USA
 SOURCE: Ger. Offen., 35 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2519388	A1	19751113	DE 1975-2519388	19750430
DE 2519388	B2	19770714		
US 3969398	A	19760713	US 1974-465976	19740501
NL 7505071	A	19751104	NL 1975-5071	19750429
NL 161763	B	19791015		
NL 161763	C	19800317		
ES 437154	A1	19770116	ES 1975-437154	19750429
SU 588923	D	19780115	SU 1975-2128797	19750429
BE 828599	A1	19751030	BE 1975-155961	19750430
DK 7501881	A	19751102	DK 1975-1881	19750430
DK 138655	C	19790226		
DK 138655	B	19781009		
SE 7505040	A	19751103	SE 1975-5040	19750430
SE 427752	B	19830502		
SE 427752	C	19830811		
FR 2269533	A1	19751128	FR 1975-13700	19750430
JP 50160222	A2	19751225	JP 1975-51595	19750430
IN 138442	A	19760207	IN 1975-CA878	19750430
BR 7502651	A	19760316	BR 1975-3371	19750430
DD 119241	C	19760412	DD 1975-185804	19750430
ZA 7502792	A	19760428	ZA 1975-2792	19750430
AT 7503339	A	19760915	AT 1975-3339	19750430
AT 336637	B	19770510		
AU 7580701	A1	19761104	AU 1975-80701	19750430
GB 1467778	A	19770323	GB 1975-17955	19750430
CS 179938	P	19771230	CS 1975-3031	19750430
CA 1030157	A1	19780425	CA 1975-225882	19750430
HU 172170	P	19780628	HU 1975-MO936	19750430
CH 613210	A	19790914	CH 1975-5571	19750430
PL 106051	P	19791130	PL 1975-180087	19750430
RO 70907	P	19800415	RO 1975-82133	19750430
			US 1974-465976	19740501

PRIORITY APPLN. INFO.:

AB Oxidn. of (HO)2P(O)CH2N(CH2CO2H)2 on activated **carbon** to give the herbicide (no data) (HO)2P(O)CH2NHCH2CO2H was related to the type of activated **carbon**, its pH, and its effective surface area as well as reaction time and temp. The reaction was faster with activated **carbon** of pH >6.0 than of pH <4.0.

L7 ANSWER 21 OF 21 CAPLUS COPYRIGHT 2000 ACS
 ACCESSION NUMBER: 1976:51531 CAPLUS
 DOCUMENT NUMBER: 84:51531

TITLE: Herbicidal N-phosphonomethylglycine
 PATENT ASSIGNEE(S): Imperial Chemical Industries Ltd., Engl.
 SOURCE: Fr. Demande, 9 pp.
 CODEN: FRXXBL
 DOCUMENT TYPE: Patent
 LANGUAGE: French
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2253104	A1	19750627	FR 1974-39210	19741129
FR 2253104	B1	19780922		
GB 1494197	A	19771207	GB 1973-55663	19741106
ZA 7407254	A	19751126	ZA 1974-7254	19741112
DK 7406008	A	19750728	DK 1974-6008	19741119
AT 7409304	A	19760915	AT 1974-9304	19741120
AT 336636	B	19770510		
AU 7475645	A1	19760527	AU 1974-75645	19741122
SE 7414840	A	19750602	SE 1974-14840	19741126
BR 7409912	A	19760525	BR 1974-9912	19741127
JP 50084532	A2	19750708	JP 1974-135938	19741128
ES 432449	A1	19761101	ES 1974-432449	19741129
CH 594692	A	19780131	CH 1974-15895	19741129
HU 172665	P	19781128	HU 1974-IE661	19741129
			GB 1973-55663	19731130

PRIORITY APPLN. INFO.:

AB In the electrochem. prepn. of N-phosphonomethylglycine [1071-83-6] or a salt of this compd., an aq. soln. of N-phosphonomethyliminodiacetic acid (I) [5994-61-6] or one of its salts is electrolyzed at 0.8-1.2 V (vs.

SCE)

at pH >7, with mech. agitation of the soln. The electrodes are of vitreous C [7440-44-0], a noble metal or RuO₂. In the oxidn. reaction, one of the carboxymethyl groups attached to the N atom is eliminated and replaced by an atom of H. Surfactants are added to the product soln. to be used as an herbicide. For example, an elec. current was passed through a soln. of 0.2M I in 1.4M NaOH at 22.degree. soln. temp. The electrodes were all of C. The quantity of current passed was theor. sufficient to transform 75% of the initial material into the desired product. The product soln. was analyzed by NMR spectroscopy. At pH 14 and 1.0 V using a vitreous C electrode, the yield based on the initial material used was 100%.